Course: BIOS 211 all sections
Term: Spring 2022
Rooms: ABL 128/129

INSTRUCTOR CONTACT INFORMATION

Instructors:

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YOUR PLACE AND PARTICIPATION IN SCIENCE IS IMPORTANT!

Who we are in place and time – The state of Texas, where Rice University is located, has been a meeting and trading location for Indigenous tribes including the Apache, Caddo, Comanche, Kiowa, and Wichita. Three federally recognized tribes and two state-recognized tribes currently reside in Texas.

The study of biology like many fields has historically excluded people of color, women, and other groups. This lack of diversity has likely led to missed opportunities for exploration – an exclusion of talented people who might have made great contributions, not just costly to "science" but for those individuals as well – and to delayed censure of unethical research practices, such as applications of eugenics and recruitment of prisoners for research trials. We acknowledge that even Rice University missed opportunities by excluding students of color until the 1960s. While the field is now more inclusive, it is important to learn about these examples and the impact of this history on the current field. The questions we choose to ask in science are influenced by those who are included in the scientific endeavor. ***We want and need you included in this conversation!***

TO PARAPHRASE JOHN DONNE, "NO ONE IS AN ISLAND"

The BioSciences DEI mission statement can be found at https://biosciences.rice.edu/diversity-equity-and-inclusion. The instructors of this course are committed to its principles. We all bring different experiences and ideas that enrich this class. As a participant you should strive to honor the diversity of the class. If there are aspects of the instruction of this course that result in barriers to your inclusion in course content, please contact us. In this classroom you have a right to define your identity, but we stress that no student is ever presumed to speak on behalf of any group or anyone other than themselves. Everyone has the right to be addressed by the name and pronouns that correspond to their gender identity, including non-binary pronouns. Rosters do not list gender or pronouns so you may be asked to indicate the pronouns you use so that we do not make assumptions based on your name and/or appearance/self-presentation (you are not obligated to do so). If you use a chosen name, please let us know. Chosen names and pronouns are to be respected at all times in the classroom. Mistakes in addressing one another may happen, so we encourage an environment of openness to correction and learning. We will not, however, tolerate repeated comments which disrespect or antagonize anyone who has indicated pronouns or a chosen name. Chosen name and personal pronouns may evolve over time, so if at any point during the semester you would like to be addressed differently, please let us and the teaching assistants know.

YOUR IDEAS AND OPINIONS ARE IMPORTANT AND NEEDED IN OUR PEDAGOGICAL APPROACH

This semester we are conducting a study looking at teaching and learning. The purpose of this study is to determine the factors that influence teaching effectiveness and learning. Your participation in this study will last for the duration of the current semester and will entail activities (**reflections** and **surveys**) no different from regular activities you would otherwise engage in as part of the course. If you would like more information, please ask. If you would like to opt out of the study, please talk to Dr. Catanese as soon as possible. Opting out does not excuse you from doing the activities, but your collected data will not be used and will be deleted. All protocols were approved by the Institutional Review Board of Rice University (Protocol FY2017-294).

WHAT WE WANT YOU TO LEARN AND PRACTICE

We say that doctors practice medicine and lawyers practice law, but we do not say *scientists practice science* even though we do. In this course, we will provide opportunities for you to practice the life skills of critical thinking, time management, communication, and collaboration. These opportunities will be manifested through self-scheduled and self-guided work as you become more independent while pursuing a small research project with your teammates. We will provide opportunities for you to gain more independence to focus on the feasibility of your chosen procedures within the scientific process as well as opportunities to modify and repeat your experiments. In addition to this exploration, you will be exposed to standardized research skills (see below) and are expected to meet specific criteria to achieve competency of those skills.

COURSE OBJECTIVES AND LEARNING OUTCOMES

- Recognize the importance of maturity and responsibility when working in a professional environment
- Understand how to report meaningful data
- Possess basic laboratory skills desired of an independent researcher
- Understand how to communicate research results professionally
- Understand the scientific method and develop your own sense of curiosity
- Experience that not all scientific experiments work as planned and formulate a path forward

LAB COMPETENCY TRAINING

Open-ended research projects will be different for each section of the course; instructors will provide an introduction to the project in Canvas. In addition to an open-ended research project, your training in this course will include a set of competencies that will help you practice skills and techniques that are common in Bioscience laboratories.

- Pipetting small volumes with micropipettes
- Making solutions, dilutions, and understanding the pH meter
- Keeping real-time lab records in notebooks
- Using aseptic technique to culture microorganisms
- Using microscopy to make quantitative and qualitative observations of microorganisms
- Using standard curves to estimate concentration, molecular weight, *etc*.
- Analyzing protein mixtures and purification using SDS-PAGE
- Graphing, statistics, and proper positive and negative controls
- Understanding what information is present in different sections of a research paper

CLASS ATTENDANCE AND ABSENTEE POLICIES

BIOS 211 will start off remote for the first two weeks and will strive to be in-person starting in Week 3. We will follow the policies set forth by the university and adjust as needed. In addition, the need to protect the health of our community means that the university is expecting everyone, students included, not to come to campus or class if they are not feeling well. Instructors will be lenient in excusing absences due to these fluid circumstances. ***As with any relationship, communication is key --- please let your us know how we can help you.***

Bi-Weekly Progress: Starting at the end of Week 3, each student will submit bi-weekly progress plans in Canvas. This exercise is designed to help each team chart their research progress throughout the semester, inform our team meetings, and encourage each student to think about the current status of the project and plan for which steps are next. These surveys are also meant to help you navigate the scientific literature for your project.

Lab Meetings: Teams and team meeting times will be assigned in Week 1. Beginning in Week 3, these weekly team meetings will be 20 minutes with your instructor. They will be in person unless university policies change. *If you are going to miss one of these meetings, please e-mail your instructor and your team members preferably 24 hours in advance.* During these meetings, we will review your assignments and research progress as well as plan for upcoming experimental work.

REQUIRED TEXTS AND MATERIALS

Text: *Writing Papers in the Biological Sciences* by McMillan 7th ed. (ISBN13: 978-1319268466; ISBN10: 1319268463).
Safety glasses (not goggles) – Available for purchase during the third week of class (and Monday and Tuesday of Week 4) from 12 PM – 1 PM either in the ABL 125 lobby or by the picnic tables in front of ABL 125. **Face masks** will be required to work in the lab space. Students are required to provide their own face masks. In addition, the lab attire is long pants/skirts (below mid-calf) and closed-toe shoes. Lab coats are available and provided in the lab space when necessary.

GRADED WORK AND POLICIES

We will strive to provide your graded work and feedback in a timely manner. Your score in this class will be determined from the following categories of graded work:

- **Lab Citizenship and Attendance (10%)**
  Lab citizenship will measure your attendance, participation in reflections and bi-weekly progress surveys, contribution to lab jobs, responsibility, safety, consideration of others, teamwork, and equipment use. Each team will be assigned a specific 20-minute meeting time on their registered lab day to meet with their instructor.
- **Lab Notebooks (Mid-term 5%; Final 10%)**
  Lab Notebooks will be completed as a team in real time and scored twice (mid-semester and end-of-semester). These will document your team's research related to an ongoing independent research project.
- **Project Description (5%)**
  As a team, you will provide a one-page description of the plan for your project. This will be one of the first entries in your team lab notebook.
- **Poster Presentation (10%)**
  All team members will contribute to the poster and video presentation of your research plan, results and interpretations, and implications or applications of the work (currently planned for Week 12).
- **Progress Report (final paper) (15%)**
  The Progress Report will be completed ***individually*** and will be due at the end of the semester.
- **Lab Competency Assignments (45%)**
  Competency assignments will be due at various times during the semester, and due dates will differ for different sections. Each competency will indicate whether it is completed as an ***individual*** or as a ***team***, as well as how long it may take the average novice student or team to complete. To make best use of our resources, each section will be assigned different competencies at different times of the semester. However, all sections will complete all competencies by the end of the semester. Due dates for these assignments are listed in the calendar for each section in Canvas.

All team members will receive the same score on team-based assignments -- lab notebooks, project description, poster presentation, and team competencies. Late assignments will be accepted with a penalty commensurate with the tardiness of the assignment, typically 10% per 24-hour period past the due date. Instructors will be lenient when excusing late assignments based on COVID-related absences.

RICE HONOR CODE

In this course, all students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this university. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at http://honor.rice.edu/honor-system-handbook/. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. **You should not view material from previous offerings of this course, nor should you share or upload online any materials from this semester.** In addition to the university honor code, the honor code for this course includes working on individual and team assignments as indicated on each assignment as well as honest and timely recording of your research in the lab notebook.

DISABILITY SUPPORT SERVICES

If you have a documented disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Disability Support Services (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with your instructor(s) to discuss your accommodation needs.

PSYCHIATRIC / MENTAL HEALTH DISABILITIES

Reports suggest that about 1 in 5 college students suffers from anxiety, depression, bipolar disorder or other mental health issues. Students with psychiatric disabilities are entitled to reasonable academic accommodations as provided by the American Disabilities Act (ADA) of 1990 and 2008 amendments. You do not need to have had your disability diagnosed before your arrival at Rice. To receive accommodations, you must register with the Disability Support Services (DSS) Office in the Allen Center. A Rice student requesting accommodations must self-identify to the DSS office and provide recent documentation of their disability. This documentation is used to establish the Rice student as an individual with a disability and provides rationale for reasonable accommodations. This process requires evaluation and documentation so do not wait until the last minute, speak with your healthcare professional or consult with the Student Wellbeing and Counseling Center (https://wellbeing.rice.edu). You will not need to disclose your specific disability with your instructor, but documentation is required to secure accommodations.

BASIC NEEDS SECURITY / STUDY SKILLS SUPPORT

Food and housing insecurity can make learning difficult. Students who are having trouble making ends meet are encouraged to find support through the Access and Opportunity Portal (https://aop.rice.edu) and resources provided by the Office of Student Success Initiatives (https://success.rice.edu). Study skill support and additional resources can be found on the SSI website. Your College Magisters may also be able to provide additional assistance.

TITLE IX RESPONSIBLE EMPLOYEE NOTIFICATION

Rice University cares about your wellbeing and safety. Rice encourages any individual who has experienced an incident of harassment, pregnancy discrimination or gender discrimination or relationship, sexual, or other forms interpersonal violence to seek support through The SAFE Office. Students should be aware when seeking support on campus that most employees, including your instructors, are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. For more information, please visit safe.rice.edu or email titleixsupport@rice.edu or Title IX Compliance Officer Richard Baker.

DEAN OF UNDERGRADUATES GUIDELINES FOR RELIGIOUS ACCOMMODATIONS

Both Rice's policy of non-discrimination on the basis of religion and our core values of diversity and inclusion require instructors to make reasonable accommodations to help students avoid negative academic consequences when their religious obligations conflict with academic requirements. Every reasonable effort will be made to allow members of the university community to observe their religious holidays without jeopardizing the fulfillment of their academic obligations. It is never acceptable for an instructor to compel a student to choose between religious observance and academic work. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. It is the obligation of students to provide faculty with reasonable notice of the dates of religious holidays and practice on which they will be absent.

Note: *The information contained herein this course syllabus, other than university policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructors. As always, please feel free to email and/or talk with your instructors.*